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ABSTRACT

This document, which is intended for use by community and junior colleges throughout Mississippi, contains curriculum frameworks for the course sequences in the jewelry design, fabrication, and repair program. Presented in the introduction are a framework of programs and courses, a program description, and suggested course sequence. Section I consists of outlines for each of the following course sequences in the program: jewelry and watch repair (fundamentals of watch and jewelry repair, special problem in jewelry and watch repair, and work-based learning in jewelry and watch repair); jewelry design, fabrication, and repair (basic jewelry repair, jewelry casting and design, jewelry repair I-III, stone setting, and advanced stone setting); and watch repair (mechanical watches I-II, basic quartz analog watches, watch repair, and advanced watch repair I-III). Each course outline contains some/all of the following: course name and abbreviation; course classification; course description; prerequisites; and competencies and suggested objectives. Recommended tools and equipment are listed in section II. Appended are lists of related academic topics and workplace skills for the 21st century and a student competency profile for the jewelry design, fabrication, and repair and watch repair programs. (MN)

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Mississippi Curriculum Framework for Jewelry and Watch Repair

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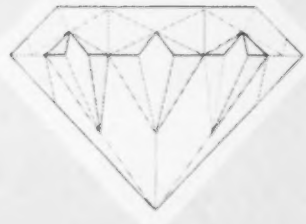

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1996

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July 30, 1996

MISSISSIPPI

CURRICULUM FRAMEWORK

FOR

JEWELRY AND WATCH REPAIR CLUSTER

(Program CIP: 47.0408 – Watch, Clock, and Jewelry Repair)

POSTSECONDARY PROGRAMS 1996

July 30, 1996

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FOREWORD

In order to survive in today's global economy, businesses and industries have had to adopt new practices and procedures. Total quality management, statistical process control, participatory management, and other concepts of high performance work organizations are practices by which successful companies survive. Employers now expect their employees to be able to read, write, and communicate effectively; solve problems and make decisions; and interact with the technologies that are prevalent in today's workplace. Vocational-technical education programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U. S. Departments of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name - A common name that will be used by all community/junior colleges in reporting students.

- Course Abbreviation - A common abbreviation that will be used by all community/junior colleges in reporting students.

- Classification - Courses may be classified as:
  - Vocational-technical core - A required vocational-technical course for all students.
  - Vocational-technical elective - An elective vocational-technical course.
  - Related academic course - An academic course which provides academic skills and knowledge directly related to the program area.
  - Academic core - An academic course which is required as part of the requirements for an Associate degree.

- Description - A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.

- Prerequisites - A listing of any prerequisite courses that must be taken prior to or on enrollment in the course.

- Competencies and Suggested Objectives - A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For example, in a four semester hour course consisting of 30 hours lecture and 120 hours of laboratory activities, approximately 22 hours of lecture and 90 hours of lab should be taken by the competencies and suggested objectives identified in the course framework. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
  - 3 semester credit hours — Math/Science Elective
  - 3 semester credit hours — Written Communications Elective
  - 3 semester credit hours — Oral Communications Elective
  - 3 semester credit hours — Humanities/Fine Arts Elective
  - 3 semester credit hours — Social/Behavioral Science Elective

  It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
  - students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
  - students who cannot demonstrate mastery of this content will be given the opportunity to do so.

- The roles of the Baseline Competencies are to:
  - Assist community/junior college personnel in developing articulation agreements with high schools, and
  - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts

- The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.

- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

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FRAMEWORK OF PROGRAMS AND COURSES

	Watch Repair	Jewelry Design
Fundamentals of Watch and Jewelry Repair	X	X
Basic Jewelry Repair		X
Jewelry Casting and Design		X
Jewelry Repair I		X
Jewelry Repair II		X
Jewelry Repair III		X
Stone Setting		X
Advanced Stone Setting		X
Mechanical Watch I	X	
Mechanical Watch II	X	
Basic Quartz Analog	X	
Watch Repair	X	
Advanced Watch Repair I	X	
Advanced Watch Repair II	X	
Advanced Watch Repair III	X	
Work-Based Learning in Jewelry and Watch Repair	E	E
Special Problem in Jewelry and Watch Repair	E	E

NOTE: X = required course; E = elective course.

PROGRAM DESCRIPTION

JEWELRY DESIGN, FABRICATION, AND REPAIR

This is an instructional program that prepares individuals to design, fabricate, and repair jewelry articles such as rings, brooches, pendants, bracelets, and lockets. Included is instruction in model making, casting, engraving, polishing, stone setting, fitting rings, and soldering broken parts; reshaping and restyling old jewelry; and using special jeweler's hand tools and machines.

The Jewelry Design, Fabrication, and Repair program is designed to be taught in a practical "hands-on" laboratory environment with emphasis on individualized instruction. The program begins with a "common core" of skills which is shared with the Watch Repair program and focuses on the development of fundamental skills common to both areas. Students who complete this program are eligible to receive a vocational certificate in Jewelry Design, Fabrication, and Repair.

July 30, 1996

JEWELRY AND WATCH REPAIR CLUSTER

JEWELRY DESIGN, FABRICATION, AND REPAIR

SUGGESTED COURSE SEQUENCE*

FIRST YEAR

4 sch	Fundamentals of Watch and Jewelry Repair (WJV 1114)	4 sch	Jewelry Repair I (WJV 1244)
4 sch	Basic Jewelry Repair (WJV 1224)	4 sch	Jewelry Repair II (WJV 1254)
4 sch	Jewelry Casting and Design (WJV 1234)	4 sch	Jewelry Repair III (WJV 1264)
		3 sch	Elective**
12 sch		15 sch	

SUMMER

4 sch	Stone Setting (WJV 1274)
4 sch	Advanced Stone Setting (WJV 1284)
3 sch	Elective**
11 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Elective choices: Work-Based Learning in Jewelry and Watch Repair [WJV 192(1-6)] or Special Problem in Jewelry and Watch Repair [WJV 191(1-3)].

PROGRAM DESCRIPTION

WATCH REPAIR

Watch Repair is an instructional program that prepares individuals to maintain and repair mechanical as well as quartz watches by using diagnostic and other test equipment. These repairs include disassembling, removing and replacing parts, cleaning, and adjusting. Some minor repairs performed are replacing bands, crystals, and crowns, and other minor adjustments. The student will learn to use various bench and hand tools such as lathes, staking tools, loupes, truing calipers, timing machines, pallet warmers, and other grinding, drilling, and polishing tools.

The Watch Repair program is designed to be taught in a practical "hands-on" laboratory environment with an emphasis on individualized instruction. The program begins with a "common core" of skills which is shared with the Jewelry Design, Fabrication, and Repair program and focuses on the development of fundamental skills common to both areas. Students who complete this course are eligible to receive a vocational certificate in Watch Repair.

JEWELRY AND WATCH REPAIR CLUSTER

WATCH REPAIR

SUGGESTED COURSE SEQUENCE*

FIRST YEAR

4 sch	Fundamentals of Watch and Jewelry Repair (WJV 1114)	4 sch	Basic Quartz Analog (WJV 1144)
4 sch	Mechanical Watch I (WJV 1124)	4 sch	Watch Repair (WJV 1154)
4 sch	Mechanical Watch II (WJV 1134)	4 sch	Advanced Watch Repair I (WJV 1164)
		3 sch	Elective**
12 sch		15 sch	

SUMMER

4 sch	Advanced Watch Repair II (WJV 1174)
4 sch	Advanced Watch Repair III (WJV 1184)
3 sch	Elective**
11 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Elective choices: Work-Based Learning in Jewelry and Watch Repair [WJV 192(1-6)] or Special Problem in Jewelry and Watch Repair [WJV 191(1-3)].

July 30, 1996

SECTION I:

CURRICULUM GUIDE

FOR

JEWELRY AND WATCH REPAIR

July 30, 1996

JEWELRY AND WATCH REPAIR COURSES

Course Name: Fundamentals of Watch and Jewelry Repair

Course Abbreviation: WJV 1114

Classification: Vocational-Technical Core

Description: This course includes a basic background and history of jewelry, as well as the modern watch. The course also includes tool making, use of various measuring instruments and gauges, use of torch for soldering as well as for heat treatment, filing brass projects to measurement, safety practices, and sharpening of turning gravers. Also included are polishing and cleaning jewelry, watch bands, take-in repairs, adjusting watch bands, engraving, and some battery installations. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate safety procedures used in jewelry and watch service.
   a. Apply safety rules for personal and general shop safety including eye (State Eye Safety Law provisions), ear, and body protection; general rules of shop conduct; and the use of safety color coding.
   b. Apply general safety rules for tool and shop equipment use including use of hand tools, electric power tools, and other shop equipment.
   c. Apply general safety rules associated with working on various engraving units.
   d. Apply rules and procedures associated with fire safety including procedures for handling and storing flammable liquids and proper use of fire fighting devices.
   e. Complete a comprehensive written exam according to local and state regulations.

   Related Academic Topics (See Appendix A): C2, C4, S5, S6, S8
   Workplace Skills (See Appendix B): WP5
2. Demonstrate procedures for handling, storing, and disposing of hazardous materials, as per current federal and state regulations.
   a. Recognize signal words and symbols that indicate severity of a hazard.
   b. Describe procedures for storing hazardous waste.
   c. Interpret data found on a hazardous material container.
   d. Describe general safety procedures for first aid and cleanup to follow in case of an accident involving hazardous materials.
   e. Demonstrate procedures for handling, storing, and disposing of hazardous materials.

   Related Academic Topics (See Appendix A): C1, C2, C4, S5, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP4, WP5, WP6

3. Demonstrate safe and proper use and storage of tools and equipment in a watch and jewelry shop.
   a. Identify and demonstrate the safe and proper use of common hand tools including cutters, pliers, screwdrivers, striking tools, etc.
   b. Identify and demonstrate the safe and proper use of cleaning equipment.
   c. Identify and demonstrate the safe and proper use of power equipment including flex shaft, drills, grinders, and polishing equipment.
   d. Organize and maintain a systematic storage system for hand and power tools.

   Related Academic Topics (See Appendix A): C2, C4, S8
   Workplace Skills (See Appendix B): WP1, WP5, WP6
4. Identify measurement procedures for hand tools used in watch and jewelry repair.
   a. Demonstrate the measurement procedures for millimeter gauges to exact measurement.
   b. Demonstrate the measurement procedures for carat scales to exact measurement.
   c. Demonstrate the measurement procedures for the troy scales to exact measurement.

   Related Academic Topics (See Appendix A): C1, M1, M4
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Make a file cleaner.
   a. Select nail and forge to desired taper using hammer and anvil.
   b. Draw file until the appearance is smooth and clean.
   c. Anneal to soften and bend to 90° angle.
   d. Create teeth by rubbing on flat file.

   Related Academic Topics (See Appendix A): C1, C3, C4, C6, M1, M4,
   Workplace Skills (See Appendix B): WP2, WP4, WP6
6. Demonstrate filing projects to exact measurement.
   a. File a brass rod parallel to tolerances (3 mm x 10 mm).
   b. File a brass rod to a square shoulder to tolerances (4 mm x 5 mm).
   c. File a brass rod to a hexagon to tolerances (4 mm x 4 mm x 4 mm x 20 mm).
   d. File a brass rod to a step square to tolerances (4 mm x 3 mm x 2 mm x 1 mm).
   e. File a brass rod to center to tolerances (1 mm x 1 mm x 5 mm).
   f. Make three brass rings to tolerance by filing, shaping, soldering, and polishing.

   Related Academic Topics (See Appendix A): C1, C3, C4, C6, M1, M4
   Workplace Skills (See Appendix B): WP2, WP4, WP6
7. Demonstrate the soft-solder of a 1 x 1 x 1 cubical.
   a. Perform the proper procedures for lighting and adjusting a torch.
   b. Perform the proper use of flux and heat control.

Related Academic Topics (See Appendix A): C1, C3, C4, C6, M1, M4, S4, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6

8. Recognize the importance of customer relations techniques.
   a. Demonstrate techniques used in communicating with customers.
   b. Explain the proper technique in billing items in and out.

   Related Academic Topics (See Appendix A): C1, C3, C4, C6, M1, M7
   Workplace Skills (See Appendix B): WP2, WP3, WP4, WP6
9. Identify the proper techniques for cleaning and polishing jewelry, watch crystals, cases, bands, etc.
   a. Identify the types of stones and metals which can or cannot be cleaned and/or polished.
   b. Demonstrate the proper procedures in chemical cleaning.
   c. Demonstrate the proper procedures for ultra-sonic cleaning.
   d. Demonstrate the proper procedures for the steam cleaner.
   e. Demonstrate the proper procedures in hand cleaning.
   f. Identify the proper polishing compounds and procedures.

   Related Academic Topics (See Appendix A): C1, C3, C4,C6, M1, M7, S5, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
10. Perform adjustment of various watch bands.
   a. Identify the types of watch bands.
   b. Determine the proper procedures for measuring the length of a watch band.
   c. Determine proper tools for adjusting watch bands.

   Related Academic Topics (See Appendix A): C1, C3, C4, C6, M1, M4, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
11. Demonstrate the proper procedures in battery installation.
   a. Identify opening procedures and tools to be used.
   b. Determine battery condition and /or replacement.
   c. Seal and replace case back.

   Related Academic Topics (See Appendix A): C1, C3, C4, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
12. Determine type of engraving and process to be used.
   a. Demonstrate proper procedure for engraving the inside of a ring.
   b. Demonstrate proper procedure for plates and plaques.

   Related Academic Topics (See Appendix A): C1, C3, C4, C6, M1, M4, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Special Problem in Jewelry and Watch Repair

Course Abbreviation: WJV 191(1-3)

Classification: Vocational-Technical Elective

Description: This course is designed to provide the student with practical application of skills and knowledge gained in other electronics or electronics-related technical courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience. (1-3 sch: 2-6 hr. lab)

Prerequisites: Consent of instructor

Competencies and Suggested Objectives:

1. Develop a written plan which details the activities and projects to be completed.
   a. Utilize a written plan which details the activities and projects to be completed.
   b. Perform written occupational objectives in the special problem.
   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP6
2. Assess accomplishment of objectives.
   a. Prepare daily written assessment of accomplishment of objectives.
   b. Present weekly written reports to instructor in activities performed and objectives accomplished.
   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP6
3. Utilize a set of written guidelines for the special problem.
   a. Develop and follow a set of written guidelines for the special problem.
   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP6

Course Name: Work-Based Learning in Jewelry and Watch Repair

Course Abbreviation: WJV 192(1-6)

Classification: Vocational-Technical Elective

Description: This course is a cooperative program between industry and education and is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)

Prerequisites: Consent of instructor

Competencies and Suggested Objectives:

1. Apply technical skills needed to be a viable member of the work force.
   a. Prepare a description of technical skills to be developed in the work-based learning.
   b. Develop technical skills needed to be a viable member of the work force.
   Related Academic Topics (See Appendix A): C4, C5
   Workplace Skills (See Appendix B): WP1
2. Apply skills developed in other program area courses.
   a. Perform skills developed in other program area courses in the work-based learning.
   Related Academic Topics (See Appendix A): C4, C5
   Workplace Skills (See Appendix B): WP6
3. Apply human relationship skills.
   a. Practice human relationship skills in the work-based learning.
   Related Academic Topics (See Appendix A): C6
   Workplace Skills (See Appendix B): WP3
4. Apply and practice positive work habits and responsibilities.
   a. Perform assignments to develop positive work habits and responsibilities.
   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP3
5. Work with instructor and employer to develop written occupational objectives to be accomplished.
   a. Perform written occupational objectives in the work-based learning.
   Related Academic Topics (See Appendix A): C5
   Workplace Skills (See Appendix B): WP6
6. Assess accomplishments of objectives.
   a. Prepare daily written assessment of accomplishment of objectives.
   b. Present weekly written reports to instructor in activities performed and objectives accomplished.

Related Academic Topics (See Appendix A): C5
Workplace Skills (See Appendix B): WP6

7. Utilize a set of written guidelines for the work-based learning.
   a. Develop and follow a set of written guidelines for the work-based learning.

Related Academic Topics (See Appendix A): C5
Workplace Skills (See Appendix B): WP6

JEWELRY DESIGN, FABRICATION, AND REPAIR COURSES

Course Name: Basic Jewelry Repair

Course Abbreviation: WJV 1224

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: This course includes silver soldering rings using the torch to any size larger or smaller without the solder joint showing any imperfections. It also includes putting bright, ripple, hammered, florentine, and satin finishes on rings. The student must successfully demonstrate knowledge of jewelry processes, terms, nomenclature, and basic precautions to stones. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Fundamentals of Watch and Jewelry Repair (WJV 1114)

Competencies and Suggested Objectives:

1. Fabricate and size brass rings to specifications.
   a. Fabricate on brass ring to specifications.
   b. Size 9 rings to larger size specifications; size 9 rings to smaller size specifications.
   c. Cut a brass ring into 5 pieces and rebuild.
   d. Stretch a brass ring 2 sizes to specifications and shrink a brass ring 2 sizes to specifications.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Refinish and polish brass rings.
   a. Polish brass rings to specifications.
   b. Refinish bright brass rings to specifications.
   c. Refinish hammered brass ring to specifications.
   d. Refinish florentine brass ring to specifications.
   e. Refinish satin brass ring to specifications.
3. Discuss stones and pearls.
   a. Discuss precautions to be taken with stones and pearls.
   b. Discuss hardness and heat tolerance when working with stones and pearls.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Repair gold rings and chains.
   a. Begin live work by sizing over-the-counter gold rings.
   b. Begin live work by soldering over-the counter gold chains.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Jewelry Casting and Design

Course Abbreviation: WJV 1234

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: This course includes instruction in hand carving wax patterns, spruing, casting, burnout cycle, bombing, electrostripping, rubber molds, and wax injection. This course includes training in manufacturing of all types of jewelry. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Basic Jewelry Repair (WJV 1224)

Competencies and Suggested Objectives:

1. Hand carve in wax.
   a. Hand carve in wax a nugget pendant.
   b. Hand carve in wax a gents' nugget ring.
   c. Hand carve in wax a ladies' nugget ring.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Sprue wax models.
   a. Sprue a nugget pendant.
   b. Sprue a gents' nugget ring.
   c. Sprue a ladies' nugget ring.
   d. Sprue an intricate pattern.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Properly mix and invest for vacuum and centrifugal casting.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP5, WP6
4. Find proper burnout temperatures for various materials to include wax, wood, bone, and plastic.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Cast jewelry using vacuum or centrifugal processes.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Clean jewelry castings using bombing and/or electrostripping techniques.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
7. Duplicate jewelry using master mold process.
   a. Identify and perform the following steps to produce wax patterns:
      i. Mold packing
      ii. Vulcanizing
      iii. Cutting rubber molds
      iv. Injecting wax
      v. Removing wax patterns

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
8. Alter and repair various wax patterns.
   a. Build up prongs on wax patterns.
   b. Change 2 wax patterns into one.
   c. Adjust wax model to stone size.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Jewelry Repair I

Course Abbreviation: WJV 1244

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: Upon completion of this course, the student will be able to use the torch for soldering heads on rings, chains, rings, and wire fabrication. The student will be able to use the flexshaft to set various stones. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Jewelry Casting and Design (WJV 1234)

Competencies and Suggested Objectives:

1. Fabricate a brass wire ladder using silver solder to exact specifications.
   a. Properly light and adjust torch for this application.
   b. Maintain proper heat control for this application.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Fabricate a brass wire cube using silver solder to exact specifications.
   a. Properly light and adjust torch for this application.
   b. Maintain proper heat control for this application.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4WP5, WP6
3. Perform techniques used in tightening loose stones.
   a. Differentiate between hardness and toughness of stones.
   b. Demonstrate the use of the proper tool with the proper stone setting.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Identify precious and semi-precious gem stones.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Identify the proper procedures for ordering stones and findings.
   a. Demonstrate the ability to measure and order various stones.
   b. Demonstrate the ability to measure and order various findings.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Perform soldering techniques to solder a head on a narrow and wide band.
   a. Maintain proper heat control for a narrow band and a wide band.
   b. Maintain proper alignment during solder.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
7. Perform setting procedures in four and six pronged settings.
   a. Demonstrate techniques in setting the stone flat and level.
   b. Properly secure the stone.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Jewelry Repair II

Course Abbreviation: WJV 1254

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: Upon completion of the course, the student will be able to solder chains, jump rings, and all chain repair. The student will be able to re-tip old prongs and replace broken prongs, make rock salt nuggets, charcoal nuggets, solder bails on large items, engrave, test carat of gold, and make all general and minor repairs that come in over the counter from live work. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Jewelry Repair I (WJV 1244)

Competencies and Suggested Objectives:

1. Demonstrate solder techniques on gold jump rings.
   a. Properly light and adjust a torch.
   b. Maintain proper heat.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M4, M5, M6, M7, S1, S2, S3, S4, S5, S6, S7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
2. Perform electroplating using gold, nickel, copper, and rhodium plating solutions.
   a. Polish and surgically clean electroplated items.
   b. Determine proper electrical currents according to applications.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M3, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Perform re-tipping and replacing prongs on various gold mountings.
   a. Properly light and adjust a torch.
   b. Maintain proper heat control.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Create a rock salt and charcoal nugget pendant.
   a. Create various designs.
   b. Alter the two designs to produce a more aesthetic appearance.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Perform fabrication of the split bail.
   a. Demonstrate proper techniques for sawing.
   b. Demonstrate proper techniques for bending.

c. Demonstrate proper techniques for soldering.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Improve the speed and accuracy of engraving skills.
   a. Demonstrate proper procedure for engraving inside a ring.
   b. Demonstrate proper procedure for plates and plaques.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
7. Analyze an unknown metal using an acid test to determine metal identity.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
8. Perform repair techniques previously practiced for over-the-counter repairs.
   a. Utilize customer relations techniques previously discussed.
   b. Perform indiscriminant repairs.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Jewelry Repair III

Course Abbreviation: WJV 1264

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: Upon completion of this course, the student will be able to successfully demonstrate the ability to completely build from round wires, square wire, and flat stock finished articles of fine jewelry . The student will also be able to use advance techniques to size rings and proper drilling of small holes for delicate soldering. The student will also be able to take in live work from over the counter and properly repair all the various types of everyday repairs. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Jewelry Repair II (WJV 1254)

Competencies and Suggested Objectives:

1. Operate rolling mill and draw plate to flatten and draw metals in various shapes.
   a. Determine the malleability of various metals.
   b. Determine the ductibility of various metals.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Fabricate by hand a pendant in wire for a fancy stone.
   a. Perform proper soldering techniques.
   b. Determine proper measurement techniques for fabrication.
   c. Demonstrate stone setting.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Perform pearl and bead stringing techniques.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Saw out initial letter for a pendant.
   a. Produce a design and layout.
   b. Demonstrate piercing and sawing the design.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Perform v-joint and lap joint on gold rings.
   a. Demonstrate filing techniques.

b. Demonstrate surface soldering techniques.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Bezel set an oval stone.
   a. Demonstrate cutting seat flat and level.
   b. Demonstrate burnishing metal to secure stone.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
7. Drill and solder wire pins in a bracelet.
   a. Demonstrate drilling out pins.
   b. Demonstrate soldering new pins and bracelet.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
8. Perform repair techniques previously practiced for over-the-counter repairs.
   a. Utilize customer relations techniques previously discussed.
   b. Perform indiscriminate repairs.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Stone Setting

Course Abbreviation: WJV 1274

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: Upon completion of this course, the student will be able to successfully set stones level in cluster and multi-head rings using bearing burrs and hart burrs, setting burrs, and gravers. The student will be able to harden and temper steel and properly sharpen tools. The student will repair all live work and understand take-in procedures. Upon job completion, all stones must be bright, level, and secure. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Jewelry Repair II (WJV 1254)

Competencies and Suggested Objectives:

1. Perform tempering processes of various metals.
   a. Demonstrate hardening metal.
   b. Demonstrate drawing, tempering, and blueing.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Demonstrate sharpening gravers.
   a. Demonstrate sharpening holder.
   b. Demonstrate sharpening by hand.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Perform stone setting procedures.
   a. Demonstrate burr setting.
   b. Demonstrate cluster plate setting.
   c. Demonstrate bar setting.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

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Course Name: Advanced Stone Setting

Course Abbreviation: WJV 1284

Classification: AOC Core (Jewelry Design, Fabrication, and Repair)

Description: Upon completion of the course, the student will be able to successfully set stones level and secure in bar setting, bezel setting, channel setting, tube setting, gypsy setting, and multi head setting (free-form). The student will be able to take in jewelry repairs using proper take-in procedures, repair carat gold jewelry as assigned, and wait on customers using professional practices. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Stone Setting (WJV 1274)

Competencies and Suggested Objectives:

1. Demonstrate successfully setting stones level and secure in various mountings.
   a. Burr set stones with graver.
   b. Pave set small stones in bar.
   c. Channel set 5 stones.
   d. Set stones in multi-head ring.
   e. Set stones in bar mounting.
   f. Set stones in gypsy mounting.
   g. Tube set stones.
   h. Bezel set large stone.
   i. Bright cut stones into 1 inch bar with 4 prongs each.
   j. Bright cut stones into 1 inch bar sharing prongs.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Perform repair techniques previously practiced for over-the-counter repairs.
   a. Utilize customer relations techniques previously discussed.
   b. Perform indiscriminant repairs.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

WATCH REPAIR COURSES

Course Name: Mechanical Watch I

Course Abbreviation: WJV 1124

Classification: AOC Core (Watch Repair)

Description: This course includes identifying watch tools and the proper use and care of those tools. The course includes limited lathe work as it relates to sharpening of turning gravers. Students will learn to handle tools and watch parts with care using safety precautions. This course also includes disassembling, identifying watch parts along with the functions of those parts, and reassembling watches. Developing hand skills, proper use of eyewear, and adjusting the work station is necessary in the course. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Fundamentals of Watch and Jewelry Repair (WJV 1114)

Competencies and Suggested Objectives:

1. Discuss the history of timekeeping mechanisms.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Construct grinding and polishing slips (for polishing pivots).
   a. File and shape according to sample.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Temper and sharpen steel gravers.
   a. Draw temper and blue.
   b. Demonstrate sharpening techniques by tool and/or hand.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Perform turning skills of the lathe.
   a. Turn punches to specifications.
   b. Turn square shoulders to specifications.
   c. Turn conical pivots to specifications.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Identify the watch repair tools and usage.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Identify watch parts.
   a. Describe the function of watch parts.
   b. Distinguish the mechanisms and divisions.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
7. Disassemble, identify, and reassemble various watches.
   a. Disassemble, identify, and reassemble pocket watch.
   b. Disassemble, identify, and reassemble man's regular wrist watch.
   c. Disassemble, identify, and reassemble man's calendar/automatic watch.
   d. Disassemble, identify, and reassemble ladies wrist watch.
   e. Disassemble, identify, and reassemble a special features watch.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Mechanical Watch II

Course Abbreviation: WJV 1134

Classification: AOC Core (Watch Repair)

Description: This course concentrates on the disassembly and re-assembly process with emphasis on regular, calendar, automatics, and small ladies' watches as relates to servicing. The student is introduced to removing and replacing a balance staff, and basic removing and replacing parts. Also included is how to professionally clean and service all types of watches. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Mechanical Watch I (WJV 1124)

Competencies and Suggested Objectives:

1. Demonstrate proper cleaning and servicing procedure.
   a. Clean and service gent's pocket watch professionally.
   b. Clean and service gent's regular watch.
   c. Clean and service automatic/calendar watch.
   d. Clean and service ladies regular and automatic/calendar watch.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Order watch parts.
   a. Identify the movement number.
   b. Identify the watch part to be replaced.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Demonstrate proper procedure on minor repairs.
   a. Install stem and crown.
   b. Match and cut watch crystals to fit case.
   c. Adjust pinions, jewels, bridges, and other parts.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Perform balance staff removal and replacement.
   a. Identify proper tools for removal and installation.
   b. Identify the type of staff.
   c. Remove hair spring and roller.
   d. Remove and replace staff.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

5. Prepare balance assembly for test and reinstall.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Basic Quartz Analog

Course Abbreviation: WJV 1144

Classification: AOC Core (Watch Repair)

Description: This course introduces the student to the quartz watch and how the technology differs from the regular mechanical and other electric timepieces. The student will learn to test circuits and coils, along with other electrical components with safety in mind; to remove and replace parts; to properly clean and service a quartz watch; and to create retro-fitting for quartz watches. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Mechanical Watch II (WJV 1134)

Competencies and Suggested Objectives:

1. Define and identify terms related to quartz watches.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Identify and discuss tools and equipment for quartz watches.
   a. Recognize all hand tools.
   b. Recognize and use testing equipment to include electrical meters.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Identify parts as they relate to the quartz watch.
   a. Disassemble and identify parts of electric timepieces.
   b. Disassemble and identify parts of LED (light-emitting diode) watches.
   c. Disassemble and identify parts of LCD (liquid crystal display) watches.
   d. Disassemble and identify parts of a quartz analog watch.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Describe the proper method of repairing coil assembly.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Clean and service the quartz watch.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Perform diagnosing, analyzing, and timing procedures.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
7. Create a retro-fitting for a quartz watch.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
8. Determine minor and major repair and/or replacement of components of the quartz watch.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Watch Repair

Course Abbreviation: WJV 1154

Classification: AOC Core (Watch Repair)

Description: This course includes removing and replacing balance staffs of pocket watches, regular wrist watches, small ladies watches, and truing and poising those balance assemblies. This course encompasses minor repair and major repair such as stems/crowns, fitting crystals, tightening cannon pinions of various types, straightening hairsprings, setting up the escapement, troubleshooting, and problem solving techniques. Professional dress, professional skills, professional communication, and professional attitude are encouraged, with emphasis on future employment. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Basic Quartz Analog (WJV 1144)

Competencies and Suggested Objectives:

1. Demonstrate professionally cleaning and servicing various types of mechanicals with emphasis on accuracy and speed.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Locate and recognize problem escapements.
   a. Distinguish damaged balance staffs.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Demonstrate proper procedure in truing and poising a balance wheel.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Restructure balance assembly.
   a. Adjust and straighten hair spring.
   b. Adjust the escapement (pallet).
   c. Adjust jewels.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Examine watch parts for repair or replacement.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Perform repair techniques previously practiced for over-the-counter repairs.
   a. Utilize customer relations techniques previously discussed.
   b. Perform indiscriminant repairs.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Advanced Watch Repair I

Course Abbreviation: WJV 1164

Classification: AOC Core (Watch Repair)

Description: This course includes cleaning and service of all types of watches as well as troubleshooting and problem solving techniques. It requires the student to be confident and increase speed and accuracy. Also included is major balance assembly repair such as staffing, truing, and poising with emphasis on special tools and their uses. This course should prepare the student to exhibit good habits, professional practices, and conduct conducive to the watch and jewelry industry. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Watch Repair (WJV 1154)

Competencies and Suggested Objectives:

1. Demonstrate cleaning and servicing for all types of watches with emphasis on speed and accuracy.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Demonstrate the many uses of the K. & D. staking tool set.
   a. Discuss the uses of the regular stake punches.
   b. Discuss the uses of specific stake punches.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Develop numbering and sketching techniques for special feature watches.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Perform major escapement repair.
   a. Remove and replace pallet stones.
   b. Remove and replace pallet arbor.
   c. Employ truing escape wheel.
   d. Perform balance staff installation with emphasis on speed and accuracy.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Remove and replace whole and cap jewels.
   a. Detect jewel cracks, remove, and replace.
   b. Recognize shock spring and release.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

6. Perform repair techniques previously practiced for over-the-counter repairs.
   a. Utilize customer relation techniques previously discussed.
   b. Perform indiscriminant repairs.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8

Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Advanced Watch Repair II

Course Abbreviation: WJV 1174

Classification: AOC Core (Watch Repair)

Description: This course includes cleaning and servicing watches of various types and special features, such as chronometers, chronographs, etc. It requires less assistance from the instructor with speed and accuracy. It requires moderate intensity and concentration. The student is challenged to all types of repair such as crystal fitting, roller jewel setting, balance staffing, truing, poising and escapement setting, and any other type repair one might encounter with minimum advice from the instructor. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Advanced Watch Repair I (WJV 1164)

Competencies and Suggested Objectives:

1. Comprehend and solve repairs of various types with emphasis on the finer grade watches.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Develop professional work ethics.
   a. Recognize the importance of initiative.
   b. Recognize the importance of appearance.
   c. Recognize the importance of professional confidence.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Prepare for and make industry visit.
   a. Determine dress for interview.
   b. Practice for interview.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Extrapolate major repair with integral calendar and automatic systems for various types of repair.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

5. Demonstrate the ability to perform various major repairs with speed and accuracy.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
6. Perform repair techniques previously practiced for over-the-counter repairs.
   a. Utilize customer relation techniques previously discussed.
   b. Perform indiscriminant repairs.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Advanced Watch Repair III

Course Abbreviation: WJV 1184

Classification: AOC Core (Watch Repair)

Description: This course requires the student to be more accurate in troubleshooting and problem solving. It includes waterproofing, using innovative techniques as well as those found in the market place. Personal appearance becomes more important as it relates to the interview process. The student must have good customer relations, have good professional practices, and a degree of initiative, as well as extrapolative ability in relationship to any watch. The student must be able to clean and service three or more watches in one cleaning basket to insure production methods. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Advanced Watch Repair II (WJV 1174)

Competencies and Suggested Objectives:

1. Demonstrate, as in a professional environment, the proper method of the following: (a) watch repair shop safety, (b) personal appearance in the market place, and (c) troubleshooting and problem solving techniques.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Distinguish repair problems that you can do and those you cannot do.
   a. Recognize specific repair needs.
   b. Practice communicating specific repair needs to the customer.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Practice diagnosis of watch repair for estimate purposes.
   a. Associate all skills attained during this program.
      i. Perform inspection of the case.
      ii. Perform inspection of the winding mechanism.
      iii. Perform inspection of the timing machine.
   b. Validate the estimate.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Perform repair techniques preciously practiced for over-the-counter repairs.
   a. Utilize customer relation techniques previously discussed.
   b. Perform indiscriminant repairs.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M4, S4, S8
Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

SECTION II:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR JEWELRY DESIGN, FABRICATION, AND REPAIR

TO BE PURCHASED BY THE STUDENT

1. Pliers, chain nose
2. Saw frame
3. File, half-round ring
4. Needle file set
5. Tweezer, utility
6. Rawhide mallet
7. Pliers, ring bending - bow
8. Ring clamp
9. Ring mandrel
10. Optivisor
11. Hercules saw blades, 1 gross
12. Textbook:
    Hardy, R.A. The Jewelry Repair Manual. Van Nostrand Reinhold Ltd. 1967.

FURNISHED BY THE SCHOOL

1. Wire Cutters - oblique, side cutters (1 ea.)
2. Millgrain tool (1)
3. Beading tool (1)
4. Ring cutter (1)
5. Prong pusher (1)
6. Wax pen (1)
7. Wax machine (1)
8. Wax carving tool (1 set)
9. Jewelers torches (8)
10. Jewelers polishing stations* (8)
11. Jewelers benches (24)
12. Soldering benches* (8)
13. Casting machine centrifugal (2)
14. Ergonomic jewelers/watchmakers chair (32)
15. Steam cleaner (1)
16. Ultra-sonic jewelry cleaners (2)
17. Air compressor (1)
18. Dust collector (1)
19. Engraving machine* (2)
20. Inside ring engraver* (1)
21. Engraving type - 5 types* (1 ea.)
22. Flexshaft (18)

23. Burnout furnace (1)
24. Bench lamps (24)
25. Rolling mill (2)
26. Electroplating rectifier (2)
27. Electronic LCD scales - diamond (1)
28. Electronic LCD scales - gram-penny weight* (1)
29. Sheet metal cutter (1)
30. Aqua torch (1)
31. Vibratory tumbler (1)
32. Rotary tumbler (1)
33. Shop vacuum (1)
34. Machinist vises - large and small* (4)
35. Vulcanizer (1)
36. Wax injector (1)
37. Bench grinder (1)
38. Pickle pot (1)
39. Electric hot plate (1)
40. Vacuum machine/cast (1)
41. Electronic metal tester (1)
42. Electro-melting pot (1)
43. Metal burrs assortments (1)
44. Safety glasses (25)
45. Large hammer and anvil* (1)
46. Draw plate (1)
47. Jewelry dryer (1)

* These items are shared with the Watch Repair program.

RECOMMENDED INSTRUCTIONAL MATERIALS AND RESOURCES

1. Overhead projector (1)
2. Diamond grading system (1)
3. VCR (1)
4. TV monitor (1)
5. Micro-VCR camera (1)
6. Videotapes, blank
7. Video - educational
8. Trade journals - subscriptions

RECOMMENDED TOOLS AND EQUIPMENT FOR WATCH REPAIR

TO BE PURCHASED BY THE STUDENT

1. Loupe, double lens
2. Loupe, double
3. MM gauge
4. Square nose pliers
5. Screwdrivers
6. Tweezers no. 3c
7. Tweezers no. 5
8. Movement holder
9. Cannon pinion remover
10. Hand remover
11. Bench brush
12. Case blade
13. Silicon
14. Roller remover
15. Benzene cup
16. Crystal Cement
17. Hammer
18. Case wrench
19. Oilers
20. Dial brush
21. Movement cover
22. Oil cup
23. Watch oil
24. Blower
25. Fountain oilers
26. Pin vise
27. Textbooks:

    Fried, H.B. Repairing Quartz Watches (ISBN 0-918845-06-8). American Watchmaker Institute Press. 1988.

    Fried, H.B. Watch Repairer's Manual (ISBN 0-918845-11-4). American Watchmaker Institute Press. 1986.

FURNISHED BY THE SCHOOL

1. Workstations (24)
   - Fluorescent lamp
   - Ergonomic chairs
2. Friction jeweling tools (2)
3. Watch timing machines (2 Mech), (2 quartz)

4. Microscope system - binocular, lighted, 30x max (1)
5. Lathes - watch makers, w/chucks (5)
6. Cleaners
   ultra-sonic (1)
   ultra-sonic watch cleaner (1)
   pressurized (1)
   manual (4)
7. Staking tool sets (5)
8. Multi-meters (6)
9. Crystal polishing machine (2)
10. Crystal cutting machine (1)
11. Crystal removing tools (4)
12. Pallet warmers (12)
13. Roller warmers (12)
14. Poising tools (12)
15. Oil stones (12)
16. Side cutters (12)
17. Files - assorted (12)
18. Bench blocks (12)
19. Jeweler's hammers (12)
20. Movement holders (12)
21. Pivot brooches (12 sets)
22. Alcohol lamps (12)
23. Graver sharpeners (6)
24. Gravers - assorted (12)
25. Heavy duty case openers (3)
26. Rolex case openers (1)
27. Waterproof tester (2)
28. De-magnetizer (2)
29. WWV time receiver (1)
30. Crystal press (2)
31. Tap and die for watch stems (1)
32. Watch band and case dryer (1)
33. Jewelers polishing stations* (8)
34. Soldering benches* (8)
35. Engraving machine* (2)
36. Inside ring engraver* (1)
37. Engraving type - 5 types * (1 ea.)
38. Electronic LCD scales - gram-penny weight* (1)
39. Machinist vises - large and small* (4)
40. Large hammer and anvil* (1)

* These items are shared with the Jewelry Design, Fabrication, and Repair program.

RECOMMENDED INSTRUCTIONAL MATERIALS AND RESOURCES

1. Overhead projector (1)
2. Diamond grading system (1)
3. VCR (1)
4. TV monitor (1)
5. Micro-VCR camera (1)
6. Videotapes, blank
7. Video - educational
8. Trade journals - subscriptions

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE
FOR JEWELRY DESIGN, FABRICATION, AND REPAIR

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Fundamentals of Watch and Jewelry Repair (WJV 1114)

_____ 1. Demonstrate safety procedures used in jewelry and watch service.
_____ 2. Demonstrate procedures for handling, storing, and disposing of hazardous materials, as per current federal and state regulations.
_____ 3. Demonstrate safe and proper use and storage of tools and equipment in a watch and jewelry shop.
_____ 4. Identify measurement procedures for hand tools used in watch and jewelry repair.
_____ 5. Make a file cleaner.
_____ 6. Demonstrate filing projects to exact measurement.
_____ 7. Demonstrate the soft-solder of a 1 x 1 x 1 cubical.
_____ 8. Recognize the importance of customer relations techniques.
_____ 9. Identify the proper techniques for cleaning and polishing jewelry, watch crystals, cases, bands, etc.
_____ 10. Perform adjustment of various watch bands.
_____ 11. Demonstrate the proper procedures in battery installation.
_____ 12. Determine type of engraving and process to be used.

Basic Jewelry Repair (WJV 1224)

_____ 1. Fabricate and size brass rings to specifications.
_____ 2. Refinish and polish brass rings.
_____ 3. Discuss stones and pearls.
_____ 4. Repair gold rings and chains.

Jewelry Casting and Design (WJV 1234)

_____ 1. Hand carve in wax.
_____ 2. Sprue wax models.
_____ 3. Properly mix and invest for vacuum and centrifugal casting.

_____ 4. Find proper burnout temperatures for various materials to include wax, wood, bone, and plastic.
_____ 5. Cast jewelry using vacuum or centrifugal processes.
_____ 6. Clean jewelry castings using bombing and/or electrostripping techniques.
_____ 7. Duplicate jewelry using master mold process.
_____ 8. Alter and repair various wax patterns.

Jewelry Repair I (WJV 1244)

_____ 1. Fabricate a brass wire ladder using silver solder to exact specifications.
_____ 2. Fabricate a brass wire cube using silver solder to exact specifications.
_____ 3. Perform techniques used in tightening loose stones.
_____ 4. Identify precious and semi-precious gem stones.
_____ 5. Identify the proper procedures for ordering stones and findings.
_____ 6. Perform soldering techniques to solder a head on a narrow and wide band.
_____ 7. Perform setting procedures in four and six pronged settings.

Jewelry Repair II (WJV 1254)

_____ 1. Demonstrate solder techniques on gold jump rings.
_____ 2. Perform electroplating using gold, nickel, copper, and rhodium plating solutions.
_____ 3. Perform re-tipping and replacing prongs on various gold mountings.
_____ 4. Create a rock salt and charcoal nugget pendant.
_____ 5. Perform fabrication of the split bail.
_____ 6. Improve the speed and accuracy of engraving skills.
_____ 7. Analyze an unknown metal using an acid test to determine metal identity.
_____ 8. Perform repair techniques previously practiced for over-the-counter repairs.

Jewelry Repair III (WJV 1264)

_____ 1. Operate rolling mill and draw plate to flatten and draw metals in various shapes.
_____ 2. Fabricate by hand a pendant in wire for a fancy stone.
_____ 3. Perform pearl and bead stringing techniques.
_____ 4. Saw out initial letter for a pendant.
_____ 5. Perform v-joint and lap joint on gold rings.
_____ 6. Bezel set an oval stone.

_____ 7. Drill and solder wire pins in a bracelet.
_____ 8. Perform repair techniques previously practiced for over-the-counter repairs.

Stone Setting (WJV 1274)

_____ 1. Perform tempering processes of various metals.
_____ 2. Demonstrate sharpening gravers.
_____ 3. Perform stone setting procedures.

Advanced Stone Setting (WJV 1284)

_____ 1. Demonstrate successfully setting stones level and secure in various mountings.
_____ 2. Perform repair techniques previously practiced for over-the-counter repairs.

Special Problem in Jewelry and Watch Repair (WJV 191(1-3))

_____ 1. Develop a written plan which details the activities and projects to be completed.
_____ 2. Assess accomplishment of objectives.
_____ 3. Utilize a set of written guidelines for the special problem.

Work-Based Learning in Jewelry and Watch Repair (WJV 192(1-6))

_____ 1. Apply technical skills needed to be a viable member of the work force.
_____ 2. Apply skills developed in other program area courses.
_____ 3. Apply human relationship skills.
_____ 4. Apply and practice positive work habits and responsibilities.
_____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
_____ 6. Assess accomplishments of objectives.
_____ 7. Utilize a set of written guidelines for the work-based learning.

STUDENT COMPETENCY PROFILE FOR WATCH REPAIR

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Fundamentals of Watch and Jewelry Repair (WJV 1114)

_____ 1. Demonstrate safety procedures used in jewelry and watch service.
_____ 2. Demonstrate procedures for handling, storing, and disposing of hazardous materials, as per current federal and state regulations.
_____ 3. Demonstrate safe and proper use and storage of tools and equipment in a watch and jewelry shop.
_____ 4. Identify measurement procedures for hand tools used in watch and jewelry repair.
_____ 5. Make a file cleaner.
_____ 6. Demonstrate filing projects to exact measurement.
_____ 7. Demonstrate the soft-solder of a 1 x 1 x 1 cubical.
_____ 8. Recognize the importance of customer relations techniques.
_____ 9. Identify the proper techniques for cleaning and polishing jewelry, watch crystals, cases, bands, etc.
_____ 10. Perform adjustment of various watch bands.
_____ 11. Demonstrate the proper procedures in battery installation.
_____ 12. Determine type of engraving and process to be used.

Mechanical Watch I (WJV 1124)

_____ 1. Discuss the history of timekeeping mechanisms.
_____ 2. Construct grinding and polishing slips (for polishing pivots).
_____ 3. Temper and sharpen steel gravers.
_____ 4. Perform turning skills of the lathe.
_____ 5. Identify the watch repair tools and usage.
_____ 6. Identify watch parts.
_____ 7. Disassemble, identify, and reassemble various watches.

Mechanical Watch II (WJV 1134)

_____ 1. Demonstrate proper cleaning and servicing procedure.

_____ 2. Order watch parts.
_____ 3. Demonstrate proper procedure on minor repairs.
_____ 4. Perform balance staff removal and replacement.
_____ 5. Prepare balance assembly for test and reinstall.

Basic Quartz Analog (WJV 1144)

_____ 1. Define and identify terms related to quartz watches.
_____ 2. Identify and discuss tools and equipment for quartz watches.
_____ 3. Identify parts as they relate to the quartz watch.
_____ 4. Describe the proper method of repairing coil assembly.
_____ 5. Clean and service the quartz watch.
_____ 6. Perform diagnosing, analyzing, and timing procedures.
_____ 7. Create a retro-fitting for a quartz watch.
_____ 8. Determine minor and major repair and/or replacement of components of the quartz watch.

Watch Repair (WJV 1154)

_____ 1. Demonstrate professionally cleaning and servicing various types of mechanicals with emphasis on accuracy and speed.
_____ 2. Locate and recognize problem escapements.
_____ 3. Demonstrate proper procedure in truing and poising a balance wheel.
_____ 4. Restructure balance assembly.
_____ 5. Examine watch parts for repair or replacement.
_____ 6. Perform repair techniques previously practiced for over-the-counter repairs.

Advanced Watch Repair I (WJV 1164)

_____ 1. Demonstrate cleaning and servicing for all types of watches with emphasis on speed and accuracy.
_____ 2. Demonstrate the many uses of the K. & D. staking tool set.
_____ 3. Develop numbering and sketching techniques for special feature watches.
_____ 4. Perform major escapement repair.
_____ 5. Remove and replace whole and cap jewels.
_____ 6. Perform repair techniques previously practiced for over-the-counter repairs.

Advanced Watch Repair II (WJV 1174)

_____ 1. Comprehend and solve repairs of various types with emphasis on the finer grade watches.

_____ 2. Develop professional work ethics.
_____ 3. Prepare for and make industry visit.
_____ 4. Extrapolate major repair with integral calendar and automatic systems for various types of repair.
_____ 5. Demonstrate the ability to perform varicus major repairs with speed and accuracy.
_____ 6. Perform repair techniques previously practiced for over-the-counter repairs.

Advanced Watch Repair III (WJV 1184)

_____ 1. Demonstrate, as in a professional environment, the proper method of the following: (a) watch repair shop safety, (b) personal appearance in the market place, and (c) troubleshooting and problem solving techniques.
_____ 2. Distinguish repair problems that you can do and those you cannot do.
_____ 3. Practice diagnosis of watch repair for estimate purposes.
_____ 4. Perform repair techniques preciously practiced for over-the-counter repairs.

Special Problem in Jewelry and Watch Repair (WJV 191(1-3))

_____ 1. Develop a written plan which details the activities and projects to be completed.
_____ 2. Assess accomplishment of objectives.
_____ 3. Utilize a set of written guidelines for the special problem.

Work-Based Learning in Jewelry and Watch Repair (WJV 192(1-6))

_____ 1. Apply technical skills needed to be a viable member of the work force.
_____ 2. Apply skills developed in other program area courses.
_____ 3. Apply human relationship skills.
_____ 4. Apply and practice positive work habits and responsibilities.
_____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
_____ 6. Assess accomplishments of objectives.
_____ 7. Utilize a set of written guidelines for the work-based learning.